A CONSIDERATION OF THE RELATIVE MERITS OF THE ALBEE OPERATION AND THE HIBBS OPERATION.

By ETHAN H. SMITH, M. D., San Francisco.

The question of whether we shall do an Albee operation or a Hibbs operation in a given case of tuberculosis of the spine, is one about which much has been said and written. Having had experience with both operations in a number of cases, and also having seen the work of Dr. R. W. Lovett and Dr. Augustus Thorndike at the Children's Hospital in Boston, the writer would like to endorse the conclusions of these gentlemen, as it seemed to them to have worked out up to a year ago.

The Albee operation is not advisable in very young subjects, say under five years of age, as the long bones are so fetal in character that the transplant from the tibia will bend after having been placed in the spine and the kyphosis will increase. While in the Hibbs operation, the callus which is thrown out as a result of raising the periosteum from the laminæ and spinous processes and the folding down of the spinous processes is soft, yet it is so voluminous that it will support the spine very much better than is the case in the Albee operation.

Experience with both operations tends more and more to prove this to be the case. The older the patient, up to adult life, the more applicable is the Albee operation. It is doubtful if the Hibbs operation should be considered after the 15th year. The callus which is thrown out after a Hibbs operation in any patient near adult life is so slight in comparison with that in young children that it is not sufficient to support the spine for a number of weeks after it is done; it does not relieve the pain in cases where pain is a prominent symptom; and the disease tends to progress almost unhindered, this in spite of the fact that the patient may be placed on a stretcher frame or in some supporting apparatus, plaster of paris or otherwise. With the Albee operation, pain due to the disease, and not attributable to the necessary trauma of the operation, usually ceases within the first twenty-four hours after the operation is done and all symptoms are ameliorated. The splint will amalgamate with the spinous processes and laminæ, if properly applied, so as to give much greater support than can be obtained by the Hibbs operation.

The Albee operation offers another advantage over the Hibbs operation in cases where the disease has involved one side of the spine to a greater extent than the opposite side: that is, in those cases in which the disease begins laterally in the vertebral bodies rather than anteriorly. The transplanted splint can be placed on the side of the concavity of the deformity, so as to overcome the tendency to lateral distortion with less strain on the splint than if placed on the opposite side of the spinous processes. This is one of many little details that must always be taken into consideration in doing an Albee operation. A chisel, or osteotome, beveled on both sides and drawn down to a keen edge, and kept just as sharp as a carpenter's chisel, should be used. Great care should be taken in chiseling the spinous processes not to pound too hard with the mallet, as heavy pounding may very markedly disturb the patient's pulse and respiration and increase the tendency to surgical shock afterward. The chisel should have a keen enough edge to be driven down with slight tapping of the mallet, thus obviating any unnecessarily rough handling of the spine.

The patient must be carefully inspected to see whether or not there is lateral deviation of the spine and the splint placed on the side showing a lateral concavity. The spinous processes must not only be stripped down or denuded so as to thoroughly eliminate any possibility of interposition of periosteum or other soft matter, but the periosteum must be lifted away from the laminæ and the splint placed snugly in the angle between the laminæ and the spinous processes.

The sutures must be passed through the base of the spinous processes and not merely through the soft parts.

There is no advantage whatsoever in attempting to put in two splints in what has been termed a "double Albee" operation. It is a waste of time, and an unnecessary and harmful sacrifice of the spinous processes which may result in defeat of the whole operation. One well-shaped transplant sawed, not chiseled, from the tibia, thoroughly settled down into a seat properly prepared in the spine and securely sutured in place, is all that is necessary. The second splint on the opposite side cannot be properly sutured in place without jeopardizing the integrity of the spinous processes and disturbing the first splint applied, nor can they both be simultaneously applied in a satisfactory manner.

In the lumbar region it is difficult to split the spinous processes as the tip is frequently large and bulbous in shape with a narrow neck which might break if serious attempt were made to split it. If it is thoroughly denuded of its periosteum the purpose is accomplished.

The splint should be shaped with a saw and all scoring, so far as possible, avoided, as it weakens the splint. By a little maneuvering, a large graft can be sawed out from the upper part of the anterior face of the tibia and so shaped as to fit accurately into the deformed spine. Chiseling out splints needlessly cracks the bone, batters the splint and the tibia, produces unnecessary and harmful trauma, and is a most slovenly way of attempting to do the operation. All bone transplants for use in the spine or long bones should be sawed in any case. By using a metal guide to get an outline of the splint to be fitted, it can be marked out on the surface of the tibia and sawed to fit accurately. It comes out easily without serious damage to the tibia, saves time, and is a neat and workmanlike way of doing the operation.

Dr. Albee is certainly right in not using plaster of paris jackets or other supports in the operation advised by him. These patients do better when

permitted to go without other support than that afforded by the properly applied graft in the spine. They should be placed face downward on pillows or a properly prepared bed until the wound over the spine is sufficiently sound to have all sutures removed.

After the Hibbs operation support to the spine is necessary, or it will be so disturbed as to interfere seriously with the result.

Great care must be exercised in handling these patients, and in removing them from the operating room to the bed, not to thoroughly wreck all the work done at operation.

Patients that are very weak and anemic should under no circumstances be operated upon until an effort has been made to build them up so as to endure both the anesthetic and the operation. The application of the principles of Crile's anoci association should be always observed.

The patient with abscesses, from which pus can contaminate the wound and gain access to the transplanted bone in the spine, should seldom be operated upon until the sinuses have healed and the pus can be excluded.

Cases where a tubercular deposit is connected with the spinous processes, where pus may not have formed, but where tubercular tissue might break down and cause pus, form a problem which must occasionally be dealt with. If the tubercular deposit is dissected out first and the wound permitted to heal before attempting an Albee operation, it may heal only temporarily and we may have a larger tubercular abscess to deal with than if it had not been touched. If we dissect out a mass of tubercular tissue and place in a transplant, we may get a union of the bone to the spine, and then have half of the transplant destroyed later on by tubercular disease. A tubercular sac over a spinous process, especially in cases which have been long on a stretcher frame or have been roughly handled by osteopathic therapy, is not an unknown experience; it affords a grave problem in considering an Albee or a Hibbs operation.

Where there is any liability of the end of the bone transplant becoming loose before union takes place between the transplant and the spinous process, a silver wire suture is an excellent thing. The suggestion of silver wire is not original with the writer.

The earlier tuberculosis of the spine is discovered and operated upon by one or other of the methods above mentioned, the more ideal will be the results. All physicians, no matter what their line of practice may be, should use their best endeavors to have parents, or those having children in charge, take the children occasionally to the family physician. The child should be stripped and its body carefully scrutinized for any possible disease or deformity. This is quite as necessary as taking a child to the dentist to have the teeth inspected and make sure there is no source of disease lurking in the mouth. Parents should not be taught to attempt to diagnose conditions for themselves, but they should be taught to take their children regularly and frequently to have a thorough examination. The proneness of many practitioners to ask a few questions and write a prescription, without stripping a patient even when the patient comes complaining of symptoms that ought to arouse suspicion of disease of the bones or joints, accounts for many of the diognoses ticketed "rheumatism." Rheumatism is getting to be almost as disgraceful a cloak for ignorance as its predecessor "scrofula."

Cases of turberculosis of the cervical spine should not be operated upon by either the Hibbs or the Albee method. Infants can be better treated by the wire cuirass or a properly applied plaster of paris cradle. Older children thrive very much better and get well very quickly and very successfully by the proper application of a plaster of paris jacket and jury mast as used by the late Lewis A. Sayre. These children can play about in the open air so happily and so comfortably with a proper jacket and jury mast and get well so quickly as compared to cases where the disease is lower down in the spine, that there is no necessity to disturb them by an operation which, because of the anatomical peculiarities of the vertebræ and the possibility of injuring the very soft structures, is likely to fail or worse.

Of course, an operation might be advisable in a case in the lower cervical region which laps over into the dorsal region. But in purely cervical cases, or in high cervical cases, an operation should not be attempted.

I wish to emphasize that I have said a *proper* plaster of paris jacket. Plaster of paris bandages wound about the patient's body in an indifferent manner are not a *proper* jacket.

We would here like to mention the colitis that frequently accompanies tubercular disease of the spine and hips. Frequently after an Albee or a Hibbs operation more pain is complained of from cramping of the bowels than from the operation. Much stringy mucus will be passed and until the bowel is relieved of this the patient will be very uncomfortable. An emulsion of kerosene 1 oz., olive oil 6 oz., allowed to flow gently into the bowel with low rectal tube, seems more efficient than anything else in clearing up the colitis as well as relieving the pain. The quantity given above is for an adult.

A WATER-BORNE TYPHOID FEVER EPIDEMIC.*

By WILBUR A. SAWYER, M. D., Director of the Hygienic Laboratory of the California State Board of Health.

The city of Healdsburg in Sonoma County, California, was almost entirely free from typhoid fever for a number of years prior to the summer of 1914. Between July 15 and September 22 of that year the city was visited by an epidemic of typhoid fever consisting of ninety reported cases and seven deaths.

Eighty of the persons affected resided in Healdsburg, and eight on near-by farms. One lived in Oakland, and one in Petaluma. All received their infection in Healdsburg. How many travelers

* Read before the Alameda County Medical Association, April 20, 1915.